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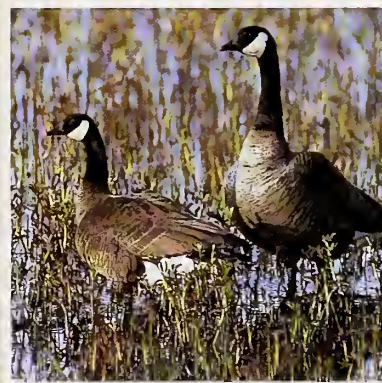
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Every Species Counts

Conserving Biological Diversity



*Biological diversity,
simply defined,
is the variety of all life
and natural processes.*

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Biological diversity, simply defined, is the variety of all life and natural processes.

Looked at closely, it encompasses all life forms, from tiny bacteria to the enormous blue whale. It includes natural processes and events such as fires and floods, life cycles, landscapes, and, ultimately, the whole biosphere we know as Earth. Preserving biological diversity is essential to humankind's very existence because all life forms are intertwined and depend on each other for their survival. Every day, people rely on plants and animals for their food, livelihood, medicine, shelter, clothes, and recreation. The extinction of a single plant species, it has been estimated, could result in the disappearance of up to 30 other species, including insects, other plants, and animals.

Web of Life

All plants and animals are valuable, each playing a role in our lives, no matter how small. Each time a species disappears, the world changes a little, and other species are affected in ways that cannot be foreseen. Our knowledge of most species and our understanding of the interrelationships among species are still quite limited, making the full impact of each extinction, or even population depletion, difficult to predict.

The Worth of a Species

The values of living organisms are diverse and often difficult to quantify. Rare species can have important economic, social, and ecological values in the fields of agriculture, medicine, and environmental monitoring.

Threatened and endangered species can provide technological advances in agriculture, such as in the development of hardier crop strains. Rare plant species that are related to cultivated food crops, such as wild species of rice and corn, may be higher in protein or grow faster than cultivated strains. Crossing cultivated varieties with sturdier wild species that grow in more diverse habitats results in highly productive, high-protein crops that can feed millions of people worldwide.

Some species provide us with early warnings of hazards that degrade the environment and our quality of life. The decline of the once-common bald eagle was a timely indicator of the detrimental effects of DDT on animals at the top of the food chain.

Other values that rare species provide are their esthetic worth and continuity of the Earth's diverse life forms. There is comfort in knowing that the variety of life that has inhabited the world for millennia and been a part of our heritage will continue to exist.

Stewards of Biological Diversity

The Forest Service manages 156 national forests and 20 national grasslands, encompassing 191 million acres and an amazing variety of habitats, from subarctic tundra to tropical rain forest. These diverse lands

provide habitat to more than 3,000 species of wildlife and fish and 10,000 plant species. Of these species, more than 230 are federally listed threatened and endangered plants and animals, and over 2,250 are agency-designated sensitive species. Approximately one-third of all federally listed species have at least some habitat on national forests and grasslands.

In 1990, the Every Species Counts program was established to bring together the resources, enthusiasm, and commitment of the Forest Service, other Federal and State agencies, private organizations, and individuals to ensure that the habitats of threatened, endangered, and sensitive species on National Forest System lands are properly managed to enhance species recovery and conservation.

Through the Every Species Counts program's cooperative efforts, the numbers of bald eagles, grizzly bears, and peregrine falcons on national forests and grasslands have increased greatly in recent years. Today, partnerships with The Nature Conservancy, State Natural Heritage Inventory Programs, the Garden Clubs of America, World Wildlife Fund, Inc., and other organizations and individuals across the country are making possible hundreds of projects to inventory, monitor, and restore rare species' habitats and populations, and to conserve rare ecosystems.

KATHY BURNETT, USDA FOREST SERVICE



Partners in ecosystem management...Hundreds of people from conservation organizations and agencies, like the California Native Plant Society (above), help with habitat and species restoration efforts on national forests and grasslands.

An Ecosystem Approach to Management

The Forest Service—with responsibilities for resource management, extensive resource research, and State and international cooperative efforts—plays a crucial role in the conservation of biological diversity and proper management of ecosystems in the United States and around the world. Forest Service efforts to manage ecosystems are wide ranging, from protecting and restoring species' populations and habitats, to conducting research on habitat fragmentation and water quality, interpreting resources for the public, and cooperating with State and private landowners to foster conservation on other lands.

Rare Species Research and Management in Action

Hell's Canyon National Recreation Area: Recovery Site for Rare MacFarlane's Four O'Clock

Forest Service involvement in cooperative efforts to implement a recovery plan for the MacFarlane's four o'clock, an endangered plant only known to exist in 17 locations in Oregon and Idaho, includes monitoring population trends, inventorying potential habitat for new colonies, conducting research on habitat competitors, and managing livestock activities. This plant is the food of *Lithariapteryx* larvae, making it an essential part of this rare moth's life cycle.



PAULA BROOKS, USDA FOREST SERVICE



In recent decades, half of the breeding population is now using nesting structures improved by the Forest Service and its cooperators.

Puerto Rican Parrot: Focus of Intensive Research and Management

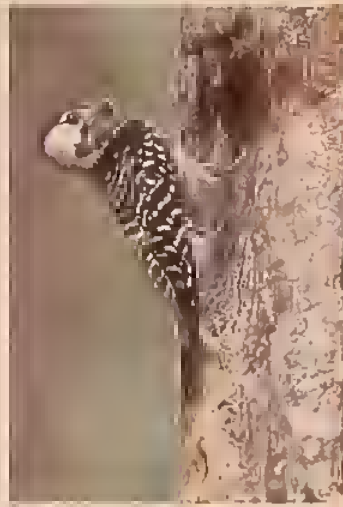
The Puerto Rican parrot, found only on the Caribbean National Forest, is the last native parrot in the United States and its territories. Hurricane Hugo's destructive forces in 1989 reduced the population of this parrot from an estimated 47 birds to 23, while severely altering about half of the parrot's prime habitat. Since then, researchers and managers from the Forest Service and other agencies have worked together to rehabilitate the species and its habitat. These efforts have helped bring back the number of wild birds to about 35 and resulted in successful nesting attempts by 6 wild breeding pairs—the most

Artificial Cavities:

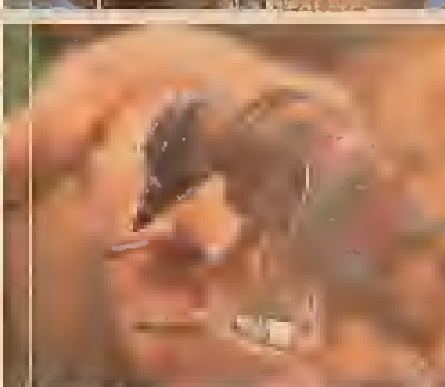
Boosting Red-Cockaded Woodpecker Numbers

Hurricane Hugo also destroyed 87 percent of the cavity trees used by the endangered red-cockaded woodpecker on the Francis Marion National Forest in South Carolina. To enhance woodpecker recovery, researchers and managers developed and installed 980 artificial cavities through the 1992 breeding season. In 1992, 63 percent of all nests were in artificial cavities. As a result of this and other cooperative efforts, red-cockaded woodpecker clan numbers rapidly increased from 238 after Hurricane Hugo to 320 in 1992.

CAROL FERGUSON, USDA FOREST SERVICE



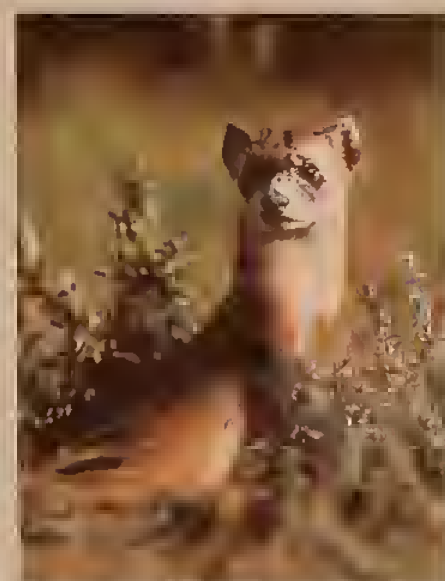
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KIM RAMOS, USDA

Black-Footed Ferret: North America's Most Endangered Mammal

Once found throughout the Great Plains of North America, the black-footed ferret is now known only in captivity and one population that was released to the wild in 1991. More than 80 percent of the black-footed ferret's diet is composed of prairie dogs. Ferrets also rely entirely on empty prairie dog burrows for shelter and for rearing their young. The Conata Basin area of the Buffalo Gap National Grassland and Badlands National Park in South Dakota is considered one of the best potential reintroduction sites.



LURAY PARKER, WYOMING DEPT. OF FISH AND GAME

The Greenback Cutthroat Trout: A Success Story

The greenback cutthroat trout is native to the Colorado headwaters of the South Platte and Arkansas River drainages. In 1973, the species had declined to only two known populations, and was listed as threatened. Since then, Forest Service managers and researchers have been instrumental in improving habitat, removing non-native fish, and reintroducing greenback cutthroat trout, which has resulted in 22 stable populations in the two drainages. Their efforts have brought the species to within sight of recovery goals.



W. GLENN TITUS

Freshwater Mollusks: Conserving Aquatic Life

Throughout the Southeastern United States, freshwater mollusk populations are restricted or declining due to changes in habitat, sedimentation, and degradation of water quality. Many southeastern national forests are inhabited by threatened and endangered species of freshwater clams and mussels. The efforts of Forest Service researchers and managers to determine the location, status, and habitat requirements of these rare mollusks, as well as the effects of current management practices on their survival, will be critical to the conservation and recovery of these freshwater species.



STEVE Q. CRY, USDA FOREST SERVICE

Challenges for the Future

Much remains to be done in the Every Species Counts program. We must study and manage for so many species and ecosystems that our knowledge of the status, behavior, habitat requirements, and values of many rare species and ecosystems is still limited. Emphasis in coming years will be on completing much-needed inventories, research studies, and population and habitat monitoring, using information from these efforts to develop and put into action a strong program for managing ecosystems. The information also will be used to improve coordination between managers and resource researchers. Many new partnerships will be forged and strengthened between the Every Species Counts program and other agencies, conservation organizations, civic groups, and individuals to increase management efforts and effectiveness.

Despite what may seem like an often formidable task—to ensure the survival of all species and the diversity and productivity of all ecosystems on our national forests and grasslands—we continue to make progress. The momentum is high. And the spirit, creativity, commitment, and hard work of our scientists, field managers, and interested public means that the future is bright for effective recovery and conservation of biological diversity on national forests and grasslands.



MARTY STEIN, USDA FOREST SERVICE

Identify, count, and monitor...On the Willamette-Whitman National Forest, Oregon, Forest Service biologists comb a steep hillside for rare plants.



HAMMOND, USDA

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a formidable task—to ensure the sustainability and productivity of all ecosystems on which we continue to make progress. The dedication, commitment, and hard work of the Forest Service and the public means that the future is bright for the preservation of biological diversity on

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Identify, count, and monitor...On the Willowa-Whitman National Forest, Oregon, Forest Service biologists comb a steep hillside for rare plants.

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